Alternatives Assembly

Conflict Resolution

Thirty-two preliminary alternatives have been developed. The starting point for the development of these alternatives was the resolution of four primary conflicts among beneficial uses and resources in the Bay-Delta system. These four primary conflicts, as described in the Public Information Workshop Package, include:

1. *Fisheries and Diversions:* The conflict between fisheries and diversions results primarily from fish mortality attributable to water diversions. This includes direct losses at pumps, reduced survival when young fish are drawn out of river channels into the Delta, and reduced spawning success of adults when migratory cues are altered. The effects of diversions on species of special concern have resulted in regulations that restrict quantities and timing of diversions.

2. *Habitat and Land Use/Flood Protection*: The needs for habitat and the needs for land use are often incompatible. Development of land, and the flood control facilities to protect the land, has resulted in an overall loss of habitat to support various life stages of aquatic and terrestrial biota. The need for habitat affects land development planning and levee maintenance and planning. Efforts to try to restore the balance often require that land use for agricultural production be dedicated to habitat.

3. *Water Supply Availability and Beneficial Uses*: As water use and competition among uses with respect to water supply availability have increased during the past several decades, conflicts have increased among uses of Delta water. A major part of this conflict is between the volume of instream water needs and out-of-stream water needs and the timing of those needs within the hydrologic cycle.

4. *Water Quality and Land Use*: A conflict over water quality in the system results from the fact that land uses often do not contribute to good water quality, and ecosystem water quality needs are usually but not always compatible with urban and agricultural water quality needs.

Approaches to Conflict Resolution

Two approaches to resolving each conflict have been developed. Each approach serves as the conceptual "edge," or most extreme method of resolving that conflict. The intent of defining approaches as these extremes is to assure that all such actions that could contribute to the resolution of the conflict can be classified as being "within" such extremes. The approaches used for each of the four primary conflicts described above are as follows:

1. Fisheries and Diversions: One extreme approach includes actions primarily intended to directly enhance fish productivity and increase fish populations (1A). The opposite extreme approach includes actions primarily intended to directly reduce impacts attributable to diversions (1B). Actions have been classified as either contributing to enhancing fish populations, or to reducing the impacts of diversions.

2. Habitat and Land Use/Flood Protection: One extreme approach includes actions primarily intended to preserve existing land uses (2A). The opposite extreme approach includes actions primarily intended to preserve the quality of existing habitat, and to create additional habitat area and value in the delta (2B). Actions have been classified as either contributing to the preservation of existing agricultural or flood protection land uses, or to additional habitat area or value.

3. Water Supply Availability and Beneficial Uses: One extreme approach includes actions primarily intended to reduce critical demands on delta waters (3A). The opposite extreme approach includes

actions primarily intended to increase critical supply to the delta. (3B). More specifically, 3A involves reducing diversions of Delta water by exporters (into the state and federal aqueducts in the south Delta, the Contra Costa Canal, and the North Bay aqueduct) during periods of high competition. Thus, water conservation, storage, or supply substitution would all fall within this approach. Approach 3B involves increasing the availability of Delta water during periods of high competition through all other means, including water conservation, or storage in and north of the Delta.

4. Water Quality and Land Use: One extreme approach includes actions primarily intended to control pollution at the source (4A). The opposite extreme approach includes actions primarily intended to manage instream water quality (e.g. treatment, dilution, etc.)(4B). Actions have been classified as contributing to increased Bay-Delta water quality through source discharge control or through instream quality management.

Two approaches are therefore possible for each of the four conflicts, resulting in a 2 by 4 matrix, or [2x2x2x2] = sixteen conflict/approach combinations.

Note that choosing one choice of a conflict also means that actions which address the other side of the conflict are no longer allowed. Thus, for example, the choice of 1A (diversions) means that no measures can be taken to increase fisheries productivity, even if 3B (increase habitat area) is chosen. In this case, fisheries would be improved through improved diversion impacts and increased habitat could only go toward benefits not directed at fisheries (e.g., wetlands). In this way, the various permutations of conflict approaches force consideration of a wide variety of solutions.

Target Solutions

Each of these conflict/approach combinations can be viewed as having either a "minimum" or "maximum" target solution. A minimum target solution includes only those actions needed to achieve the minimum objectives of each alternative, based on a consideration of technical, cost, and policy issues. Conversely, a maximum alternative target solution includes those actions needed to achieve the maximum objectives of each alternative, based on similar considerations and issues.

Provisional Actions

One other group of actions has been identified. They are tentatively identified as "provisional." These actions are considered as reasonable for inclusion in any of the 32 preliminary alternatives, with certain provisions. Some of these actions are already required by some existing laws. Since their implementation would be assumed as part of complying with existing law, they should perhaps be eliminated from consideration. Other provisional actions are partially dependent on the selection of other actions, and therefore should be accompanied with implementation stipulations that clarify such dependencies. Yet other provisional actions could be implemented at varying funding levels. These are often the institutional or policy-related issues. The level of their inclusion in one or more alternatives will depend on CALFED's level of commitment to achieving their benefits, perhaps based on some type of cost/benefit analysis and other considerations. Actions currently listed as provisional are as follows:

-Restore and enhance existing wetlands
-Improve regulation of ballast-water releases
-Improve border inspection practices
-Modify gravel mining practices
-Use real-time monitoring and adaptive management
-Operate fish barrier on San Joaquin R. at Merced R. in fall
-Establish incentives for conjunctive use
-Construct conveyance to off-stream storage

-Construct conveyance to groundwater storage
-Modify California Water Code to ease transfers
-Improve procedures for transfer permitting
-Coordinate diversion and conveyance of transfers
-Establish incentives for long-term planning
-Conduct Integrated Resources Planning
-Establish incentives for long-term conservation
-Develop alternate supplies for drought situations
Water Resources Data and Information Management
-Establish a comprehensive water data system
-Implement real-time data management system
-Integrate data for adaptive management decisions
-Establish accessible data management system
-Coordinate multiagency roles in management
-Coordinate groundwater/surface water management
-Establish incentives for cooperation/coordination
-Establish a public awareness/education program
-Encourage local determination of supplies available
-Encourage local assessment of water supply reliability
-Implement urban awareness/education programs
-Enforce wastewater discharge requirements
-Prevent toxic discharges from industrial plants
-Maintain and stabilize existing levees
-Implement uniform maintenance standards
-Provide funding for maintenance and stabilization

At this point, it is important to note that the 32 preliminary alternatives, and the actions included within each of them, are intended to capture the conceptual "edges" of possible alternatives. Hence, as many actions as possible have been retained for consideration, including the provisional actions. Step 6 - "Refinement of Alternatives," that follows, will serve to narrow the actions for each alternative, based on compliance provisions, mutual incompatibilities among actions, logical inconsistencies, and other considerations that would be too specific at this step in the process.

The Alternatives Assembly Process

The 32 alternatives represented by the 4 (conflicts) by 2 (approaches) by 2 (targets) were assembled as follows:

Each action was discussed, and either classified as:

a) provisional, or
b) inappropriate for all minimum target solution alternatives, and/or
c) appropriate for all maximum target solution alternatives, and/or
d) inappropriate or appropriate in resolving one or more conflicts using one of the two extreme approaches for each conflict.

Actions were then compiled for each of the 32 alternatives. If an action was classified as inappropriate in resolving a particular conflict (e.g. 1A), and that conflict resolution approach (1A) was inherent in the alternative, the action was not included. All other actions, classified as either provisional or appropriate, could be included in the alternative. Some actions were considered as potentially contributing to the resolution of more than one conflict, and therefore were classified with respect to two or more conflicts. If actions within an action category were very similar with respect to the benefits that could be achieved with their implementation, only the action category was classified as

either provisional or for a particular set of conflict resolution approaches.

Alternatives Presentation

The 32 alternatives are presented in the following pages. Each presentation includes a narrative description of the alternative, followed by a three-column (documentation) table. The narrative description contains the following:

- Preliminary alternative number and the corresponding conflict resolution solution strategy;
- A summary table identifying each primary conflict ,the resolution approach for that alternative (bold A or B) and target (bold minimum or maximum) adopted for that alternative;
- A solution overview section briefly explaining the intent of the alternative in view of the approaches taken for conflict resolution;
- A summary of the actions selected and the functional reasons for their selection. Functional headings may include habitat, populations, diversions, water use, water quality, land use/levees/flood protection; and institutional; and;
- A preliminary assessment of the potential strengths and weaknesses of the alternative that partially explains why, in terms of constraints, the alternative is a conceptual "edge" alternative in need of refinement.

The documentation table accompanying each alternative's narrative includes three columns. The first column is a brief title of the action. The second column is the functional reason for its selection during the assembly process. The headings used in this column are consistent with the functional headings used in the narrative. The third column is a specification for action implementation, and may include any special stipulations clarifying or limiting the implementation of that particular action.

CALFED Review

Two questions appear to be key as the CALFED staff reviews this work:

1. Do the preliminary alternatives make sense? Are they at the appropriate levels of intensitfy for minimum and maximum solutions? Do they provide for rough equity?

2. The the preliminary alternatives as a whole truly cover the gamust of reasonable solutions or do solutions exist which are <u>not</u> combinations of these solutions.